The Internet
ITS 214
Two Views

• The Internet
  • Technical View
  • A “Network of Networks”
  • Many providers, many points of interconnection

• The Web
  • User view
  • Everything is connected
  • Any system can have an effect on any other system
  • All information is interconnected
Enter the Internet

• Started as a (D)ARPA project
• Interconnection of a small number of research computers, for
  • Transfer of files
  • Remote control/commanding of computers
  • E-mail/messaging
• Some of these computers were used to relay messages (aka Routers)
Enter the Web

- ARPAnet is up and running
- A number of physics labs have loads of data to share
  - They are all connected by the network
  - There is this thing called SML (Structured Markup Language)
  - The labs put their data into SML and make these files available to a special program called a data browser - Mosaic
- The rest is history.....
So, What is “The Web”

• Application providers and consumers
  • PCs, Laptops, Phones are mainly consumers
  • So are Xboxes, Tivos, etc.

• Application/Content providers
  • Google, Facebook, weather.com, NYTimes, Hulu, Netflix, banking, ...
  • Corporate sites: OU Registrar, Student Portal, ...

• Some machines are both consumers and providers

• Transport
  • Access: DSL, Cable, Dial-up, Satellite, Corporate Dedicated lines
  • Transport inside the network
An aside: Careers

- Transport
  - ITS: design, plan, deploy, monitor

- Content
  - VICO: Web content
  - MDIA: Multimedia content, interactive gaming

- Building new stuff from scratch
  - Electrical Engineering: wireless, high speed local area networks, high speed optical networks
  - Computer Science: operating systems, applications, protocols
What we need to know

• What are the parts of a web application?
  • Packet switching needs addresses
    • How are the addresses assigned and managed
  • People use names
    • How do names convert to addresses
  • How do the content provider applications and the content consumer applications communicate
  • Protocols
What we need to know

• Transport
  • What options do consumers and small businesses have to access the internet, and how do they work
  • What options do larger companies have
  • How are devices inside the Internet connected

• Routing
  • We need to find paths through the network for each packet
    • Through very many devices
    • Through many separate (competing) providers